REMARKS

This Amendment is fully responsive to the non-final Office Action dated September 11, 2008, issued in connection with the above-identified application. Claims 1-8 were previously pending in the present application. With this Amendment, claims 1-7 have been amended; and claims 9-13 have been added. Accordingly, claims 1-13 are all the claims now pending in the present application. No new matter has been introduced by the amendments made to the claims or by the new claims added. Favorable reconsideration is respectfully requested.

In the Office Action, claims 6-8 have been rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Specifically, the Examiner alleges that claims 6-8 are directed to programs lacking the necessary hardware for the functionality of the programs to be realized. However, the Examiner also indicates that a computer-readable medium encoded with a program is a computer element, which defines the structural and functional interrelationship between the program and a computer such that the functionality of the program can be realized.

Accordingly, the Applicants have amended the above claims to point out that each of the programs are "recorded on a computer-readable medium." As amended, claims 6-8 now include the necessary hardware for the functionality of the programs to be realized. Therefore, claims 6-8 are directed to statutory subject matter, and withdrawal of the rejection under 35 U.S.C. 101 is respectfully requested.

In the Office Action, claims 1-8 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Awada et al. (U.S. Publication No. 2002/0026566, hereafter "Awada") in view of Haneda et al. (U.S. Patent No. 6,094,693, hereafter "Haneda"). The Applicants maintain that the cited prior art fails to disclose or suggest all the features recited in at least independent claims 1, 5, 6 and 7.

With regard to claim 1, the claim recites the following features:

"[a] file recording apparatus for recording data onto a recording medium which is written in clusters and erased in blocks each composed of a predetermined number of contiguous clusters, the file recording apparatus comprising:

a receiving unit configured to receive a request for writing data of a specific one of a plurality of files onto the recording medium;

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a plurality of file buffers each for a different one of the plurality of files;

a data accumulating unit configured to accumulate the data requested to be written, in one of the plurality of file buffers corresponding to the specific one of the plurality of files ;

a judging unit configured to judge whether data having been accumulated by the data accumulating unit is no smaller than a block size; and

a writing unit configured, if the judging unit judges affirmatively, to extract a block of data from the accumulated data and to write the extracted data into a free block of the recording medium." (Emphasis added).

The features emphasized above are similarly recited in independent claims 5 and 6. Specifically, each of independent claims 5 and 6 includes a judging step directed to the features of the judging unit of claim 1. Additionally, the features emphasized above are fully supported by the Applicants' disclosure.

The present invention, as recited in independent claims 1, 5 and 6, is directed to recording file data onto a recording medium which is written in clusters and erased in blocks, wherein each is composed of a predetermined number of contiguous clusters. One distinguishable feature of the present invention lies in the ability to judge whether data having been accumulated by the data accumulating unit is no smaller than a block size. If judged in the affirmative, a block of data is extracted from the accumulated data and the extracted data is written into a free block of a recording medium. Accordingly, when one or more requests are made to write file data onto a recording medium, which requires block-wise erasing before a data write, a data write is performed only once per block instead of being performed each time a data request is made. This makes the data recording of the present invention more efficient and effective than prior art data recording methods.

In the Office Action, although the Examiner relies on Awada in view of Haneda for disclosing or suggesting all the features recited in independent claims 1, 5 and 6, the Examiner relies primarily on Awada for disclosing or suggesting a judging unit that judges whether data having been accumulated by the data accumulating unit is no smaller than a block size, as recited in claim 1and similarly recited in claims 5 and 6. However, the Applicants respectfully disagree with the Examiner's conclusions with regard to Awada.

Awada discloses a data backup method that includes a step of writing incoming data into one non-volatile memory, which is performed while another non-volatile memory is being subjected to data erasing. Awada also discloses that incoming data stored to the evacuation buffer is transferred to the non-volatile memory immediately upon the non-volatile memory being available for data writing.

Also as described in Awada, an FMEM-write process writes the accumulated data in the flash EEPROM FMEM1 by a unit of one block (sector) when the accumulated data becomes full in the buffer memory BUF1 or BUF2 (see e.g., ¶ [0012]). Additionally, in a normal operation, new data is initially stored in the evacuation buffer, and then the data stored therein is immediately transferred to a non-volatile memory. And, when the non-volatile memory is not in a condition for accepting the writing of data, the data is successively accumulated in the evacuation buffer; and when the non-volatile memory becomes available for the writing of data, the data accumulated in the evacuation buffer is written in the non-volatile memory (see ¶ [0059]).

Thus, as noted above, Awada discloses or suggests the conditions and timing for writing data to a non-volatile memory. However, Awada is silent with regard to a "judging unit configured to judge whether data having been accumulated by the data accumulating unit is no smaller than a block size," as recited in claim 1 and similarly recited in claims 5 and 6.

Moreover, due to the above deficiency, writing data according to Awada is performed each time (a) the non-volatile memory becomes available for the writing of data, (b) the accumulated data becomes full in the buffers and (c) immediately after the data is stored in the evacuation buffer. Before each data write operation, any data stored on a block (onto which the data write is to be performed) needs to be read and re-written, which is a wasteful operation that will occur frequently. Thus, the recording apparatus disclosed in Awada fails to effectively write file data. In contrast, the present invention (as recited in claims 1, 5 and 6) ensures that the recording of files is effectively performed.

As noted above, Haneda is not relied on by the Examiner for disclosing or suggesting a judging unit that judges whether data having been accumulated by the data accumulating unit is no smaller than a block size, as recited in claim 1, and similarly recited in claims 5 and 6.

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However, for completeness, the Applicants have reviewed Haneda and provide the comments noted below.

After a detailed review of Haneda, the reference clearly fails to overcome the deficiencies noted above in Awada. Haneda discloses an information recording apparatus that includes the use of a recording medium that has an erasure unit larger than a writing unit. However, Haneda does not disclose or suggest a "judging unit" having the features of claims 1, 5 and 6. In fact, Haneda at best discloses that data is written beginning from the leading address of a block as a data erasure unit, that retreated data is again written after the end of the erasure of all data in the block, and that data is recorded beginning from the leading address of the block as a data erasure unit.

Therefore, without a judging unit as in the present invention, the apparatus disclosed in Haneda cannot eliminate or reduce the wasteful operations of erasing and re-writing data stored in a block before a request for data writing on a block is performed. As a result, the apparatus disclosed in Haneda fails to effectively write file data. In contrast, the present invention (as recited in claims 1, 5 and 6) ensures that recording of files is effectively performed.

Based on the above, no combination of Awada and Haneda would result in, or otherwise render obvious, independent claims 1, 5 and 6. Likewise, no combination of Awada and Haneda would result in, or otherwise render obvious, claims 2-4 at least by virtue of their dependencies from independent claim 1.

With regard to claim 7, the Applicants maintain that the claim recites features that are not believed to be disclosed or suggested by the cited prior art. Claim 7 recites the following:

"[a] program recorded on a computer-readable medium for execution by a file recording apparatus that includes a driver data buffer and that records data onto a recording medium, the recording medium being written in clusters and erased in blocks each composed of a predetermined number of contiguous clusters, the program comprising code configured to cause the file recording apparatus to perform:

a receiving step of receiving a write request that specifies a write address on the recording medium at which data is requested to be written;

a first judging step of judging, if the driver data buffer is not empty, whether the write

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address specified for the data requested to be written is contiguous to a write address specified for data stored on the driver data buffer;

a data accumulating step of accumulating, if the first judging step results in the affirmative, in the driver data buffer the data requested to be written;

a second judging step of judging whether a write address specified for data accumulated in the driver data buffer falls on a block boundary of the recording medium; and

a write step of writing, if the second judging step results in the affirmative, a part of the accumulated data from a top of the driver data buffer up to a point corresponding to the block boundary, onto the recording medium." (Emphasis added).

The features noted above in claim 7 are fully supported by the Applicants' disclosure. Additionally, the Applicants maintain that the cited prior art fails to disclose or suggest all the features of at least the "first judging step," "second judging step" and "write step" of claim 7.

Claim 7 is believed to be distinguishable over the cited prior art for similar reasons noted above for claims 1, 5 and 6. That is, claim 7 is distinguishable over the cited prior art in that when one or more requests are made to write file data onto a recording medium, which requires block-wise erasing before a data write, a data write is performed only once per block. This is effective and without waste in comparison to the case where a data write is performed each time a data request is made. In such a case, before a requested data write is performed on a block, it is required to read and re-write data currently stored on the block.

As noted above, neither Awada nor Haneda disclose or suggest the features of the judging unit of the present invention. Accordingly, the features of claim 7 are also similarly distinguishable over the cited prior art; namely the first judging step, second judging step, and write step. The present invention ensures that the recording of files is effectively performed without waste, which is a feature and advantage not disclosed or suggested by the cited prior art.

Thus, no combination of Awada and Haneda would result in, or otherwise render obvious, the features of claim 7. Likewise, no combination of Awada and Haneda would result in, or otherwise render obvious, claim 8 at least by virtue of its dependency from independent claim 7.

Finally, the Applicants maintain that new claims 9-13 are distinguishable over the cited

prior art. With regard to claims 10 and 11, the claims depend from independent claim 1. As noted above, the cited prior art fails to disclose or suggest all the features recited in claim 1. Accordingly, claims 10 and 11 are distinguished over the cited prior art at least by virtue of their dependencies from independent claim 1.

With regard to claim 9, the claim is directed to a file recording apparatus for recording data onto a recording medium which is written in clusters and erased in blocks each composed of a predetermined number of contiguous clusters. The present invention, as recited in claim 9, is distinguishable over the cited prior art in that judging unit is configured to judge whether a total size of data of the plurality of files having been accumulated in the plurality of file buffers by the data accumulating unit is no smaller than a block size. If the judging unit judges affirmatively, a block of data is extracted from the accumulated data and the extracted data is written into a free block of the recording medium.

The features noted above in claim 9 are similarly recited in independent claims 12 and 13; and are fully supported by the Applicants' disclosure. Specifically, each of independent claims 12 and 13 include a judging step directed to the features of the judging unit of claim 9.

Similarly to claim 1, by virtue of the judging unit, the present invention as recited in claim 9 (and similarly recited in claims 12 and 13) ensures that recording of files is effectively performed without waste. As noted above, neither Awada nor Haneda disclose or suggest the judging unit of the present invention. Therefore, Awada and Haneda fail to disclose or suggest the features of the judging unit of claim 9. Accordingly, claims 9-13 are distinguished from the cited prior art for at least the reasons noted above.

In light of the above, the Applicants respectfully submit that all the pending claims are patentable over the prior art of record.

The Applicants respectfully request that the Examiner withdraw the rejections presented in the outstanding Office Action, and pass the present application to issue.

Respectfully submitted,

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